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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,737	09/09/2003	Victor B. Kley	020921-001930US	3904
20350	7590	06/09/2004	EXAMINER	
TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			NOLAND, THOMAS	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 06/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/659,737	Applicant(s) KLEY, VICTOR B.	
	Examiner Thomas P. Noland	Art Unit 2856	

-- *Th MAILING DATE of this communication appears on th cover sh et with th correspondence address --*  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13, 14, 23, 24, 26-28 and 36-58 is/are pending in the application.
- 4a) Of the above claim(s) 6, 7, 11, 13, 14, 23, 24 and 49-58 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5, 8-10, 26-28 and 36-48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-11, 13, 14, 23, 24, 26-28 and 36-58 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10202003, 02232004</u> | 6) <input type="checkbox"/> Other: _____  |

1. The preliminary amendments filed October 14, 2003 and February 5, 2004 have been entered.
2. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-5,8-10, 26-28 and 36-48 are drawn to a MEMS device , any application, measurement or operation acts in which such a device acts in a specific or constrained region, or a method of nanoelectric discharge machining using such a MEMS device, classified in class 257, subclass 414.
  - II. Claims 6-7 and 49-58, drawn to a MEMS device, classified in class 250, subclass 306.
  - III. Claim 11, drawn to any nanocavitation technique, classified in class 73, subclass 105.
  - IV. Claim 13, drawn to an outflow, inflow, circulating or recirculating fluid system, classified in class 137, subclass 551.
  - V. Claim 14, drawn to an outflow, inflow, circulating or recirculating fluid system, classified in class 29, subclass 700.
  - VI. Claims 23-27, drawn to a system for scanning probe microscopes, nanomachining, nanomanipulator, or multimode operations, classified in class 73, subclass 105.
3. The inventions are distinct, each from the other because:

Inventions Group 3 and Groups (1-2 and 4-6) are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process or claimed in group 3 could be practiced by another and materially different apparatus than that of, or required by, groups 1-2 and 4-5 such as one not requiring the use of an SPM component with of least one fluid channel as in group 1; the use of a circuit for collecting particles emitted from an isotope disposed on SPM components as in Group 2; SPM means integrated with fluid transfer means as in group 4; or a fluid system where nanomachining or surface modification is conducted by means integrated with the system as in group 5 (note in claim 14, line 3 "said means" was presumed to instead have meant to be --- said system ---). Otherwise claim 14 is in comprehensible. Also the apparatus as claimed in group 6 can be used to practice another and materially different process than that of group 3 such as use in an operation not requiring the use of a nanocavitation inducing member to image or measure as in group 3.

4. Inventions Group 6 and Groups (1-2 and 4-5) are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed

does not require the particulars of the subcombination as claimed because it does not require the use of an SPM component with at least one fluid channel as in group 1, a circuit for collecting particles emitted from an isotope disposed on an SPM component as in group 2, or a fluid system as in groups 3 or 4. The subcombination has separate utility such as system where changes are induced by chemical means as in claim 23 of group 6 or in a system not requiring the use of mechanical members interacting with or substituting for the primary sense or interaction structure again claim 24 of group 6 but instead such members act with less than primary elements.

5. Inventions Group 2 and Groups (1 and 4-5) are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because it does not require the use of at least one fluid channel formed in the SPM component as in group 1, as evidenced by such at most being claimed in dependent claims 49 and 53 of group 2; it does not require the SPM means to be integrated with fluid transfer means as in group 4 as evidenced by such at most being claimed in dependent claims 49 and 53 of group 2 and it does not require the use of an integrated fluid system as in group 5 as evidenced by such at most being claimed in dependent claims 49 and 53 of group 2. The subcombination has separate utility such as use without requiring the use of a

circuit for collecting particles emitted from an isotope disposed on the SPM component as in group 3.

6. Inventions Group 5 and Groups (1 and 4) are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because it does not require the use of an SPM component or means as in groups 1 and 4. The subcombination has separate utility such as use as a MEMS device or SPM system without necessarily having nanomachining or surface modification done therewith as in group 5.

7. Inventions Group 1 and Group 4 are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because it does not necessarily require the use of fluid transfer means as in Group 4 as evidenced by claims 1-2 of Group 1 only requiring the possession of fluid channels but not requiring

them to transfer fluid. The subcombination has separate utility such as use in an SPM without necessarily having a MEMS device as in Group 1.

8. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Groups 2-6, etc., restriction for examination purposes as indicated is proper.

9. During a telephone conversation with Mr. George Yee on May 13, 2004 a provisional election was made with traverse to prosecute the invention of the invention of Group 1, claims 1-5, 8-10, 26-28 and 36-48. Affirmation of this election must be made by applicant in replying to this Office action. Claims 6-7, 11, 13-14, 23-24 and 49-58 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

10. The drawings were received on Feb. 5, 2004. These drawings are not acceptable because in Fig. 5 the separate elements should be labeled as Fig. 5A-5F. The corrections were otherwise acceptable. Note the two handle cavities at the lower left hand of the image can be labeled with one Figure number.

11. Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defect may be deferred until after the examiner has considered the proposed drawing correction. Failure to timely submit the proposed drawing correction will result in the abandonment of the application.

12. The specification should be amended to correspond to the drawing correction.

13. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

14. Claims 4-5, 9-10, 26-28 and 39-48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 4, line 7 "the particles" should be - - particles --- and in line 8 "the charge distribution" should be --- charge distribution --. In claim 9, line 2 "device " should be -- component --. Claim 10 is unclear because it is unclear how an amount of isotope can comprise regions since they appear to be different elements. It is unclear whether "10" in claim 26, line 2 was meant to be --- claim 10 ---. There is no antecedent for "the target material" in claim 28, line 2.

15. Claims 2, 5, 26 and 48 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Particular uses of the MEMS device do not act to limit the MEMS device per se.

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States



only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

17. Claims 1-2, 4-5, 36, 39 and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Kley W098/34092, cited in IDS.

Note page 11, lines 15-24, page 13, line 20-page 14, line 12, page 21, line 37-page 22, line 6, page 57, lines 6-16 and especially page 141. Re claims 4 and 5, note that conventional radiation sources are disclosed. Inherently particles emitted thereby could be delivered to the tip as claimed and could be used for nanomachining since where they go and what they do would be up to the operator.

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kley W0 98/345092.

Use at a conventional radiation source of limited radioactivity would have been an obvious expedient for convenience and safety.

20. Claims 1-2 are rejected under 35 U.S.C. 102(e) as being anticipated by Thaysen et al (US 2003/0089182 or US 2003/0062193).

Note abstract and paragraphs 2 and 24-26.

21. Claims 1-2 and 36-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Marc et al US 2003/0012657.

Note abstract, figs. 4A-4B, and paragraph 156. The action of the tweezers can be considered a type of cantilever.

22. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Hansma et al Re 34,708.

Note abstract and Fig. 2.

23. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hansma et al. Re 34,708.

Hansma et al does not disclose the use of his probe for nanomachining but since it is known that such probes can be so used it would have been an obvious expedient to do so if desired.

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited references show SPM probes with channel structures.

25. Claim 3 has been allowed.

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26. Claims 10, 26-28 and 40-47 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Noland whose telephone number is (571) 272-2202. The examiner can normally be reached on weekdays from 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Hezron E. Williams, can be reached on (571) 272-2208.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

6/7/04  
Thomas P. Noland  
Primary Examiner  
Art Unit 2856



Noland /ds

May 25, 2004